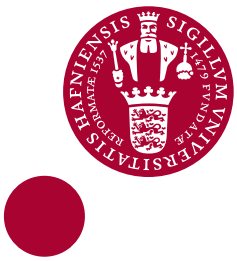

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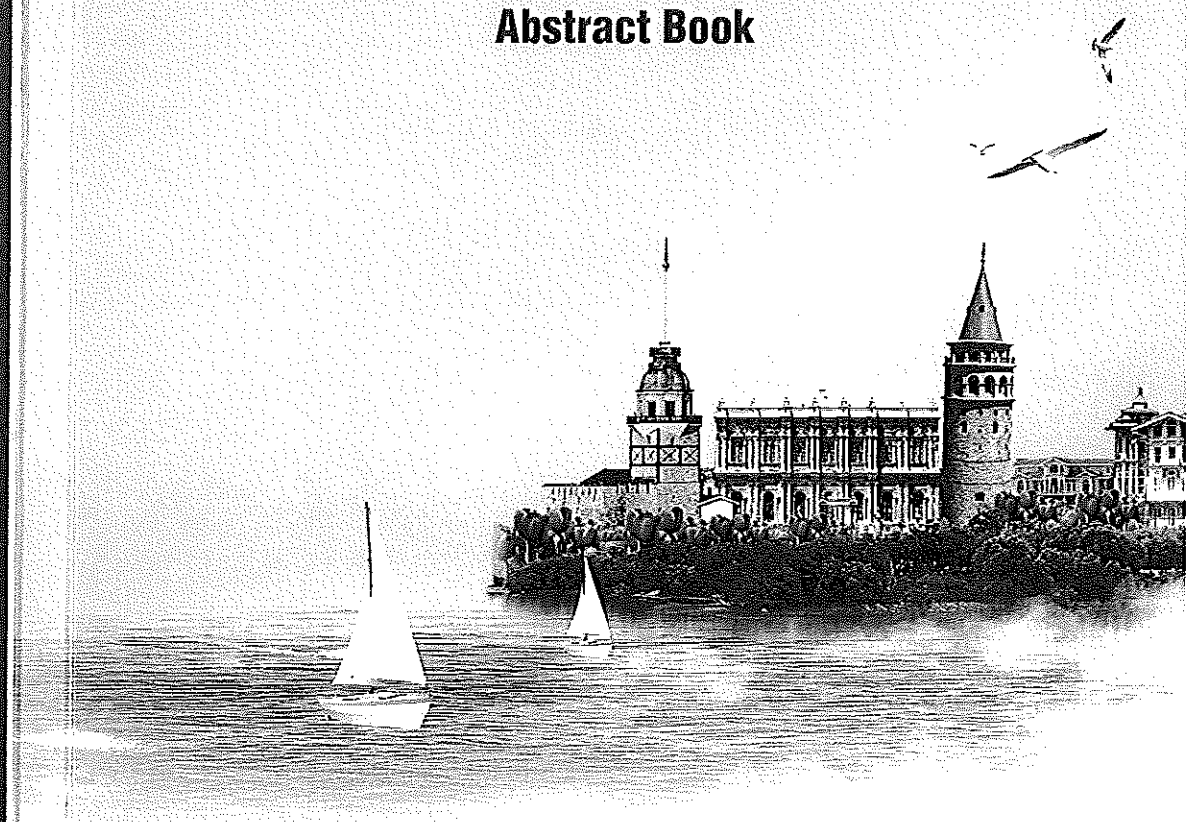

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Isolation, characterization and identification of microorganisms capable of growing in chocolate pralines

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Chocolate pralines are spoiled by growth of microorganisms in the filling. The microorganisms change the sensory appearance of the product by production of off-flavors and through crack formation due to gas production. Chocolate praline filling contain 30-50% sugar and up to 10% alcohol, which eliminates growth of most microorganisms. Nonetheless, microorganisms tolerating low water activity, such as *Aspergillus* spp., *Penicilium* spp., *Wallemia sebi*, *Zygosaccharomyces* spp., *Debaryomyces hansenii*, and *Tetragenococcus halophilus*, have previous been shown to grow in high sugar content food products. In the present study, chocolate praline samples from six small chocolate producers and environmental samples from one chocolate factory were examined for the presence of moulds, yeasts and bacteria capable of growing on high sugar containing substrates. Microorganisms were isolated from media containing up to 50% of sugar (PCA with 40% sucrose, MRS with 40% sucrose, MY50G and DG18). Moisture, pH, sugar and ethanol content of the fillings were determined for all chocolate samples. Isolated microorganisms were characterized by pheno- and genotypic methods, including 16S and 26S rRNA gene and ITS gene sequencing for bacteria, yeasts and moulds, respectively. Important technological properties, such as the sugar and alcohol growth limits, were tested. Counts up to 10^7 CFU/mL and 10^3 CFU/mL were found in the filling and the chocolate producing environment, respectively. Results show growth of moulds, yeasts and bacteria in the filling of the chocolate pralines, identified as belonging to *Aspergillus* spp., *Penicilium* spp., *Eurotium* spp., *Zygosaccharomyces rouxii*, *Aureobasidium pullulans*, *Bacillus subtilis* group, *Bacillus pumilus* group, *Staphylococcus epidermidis*, and *Staphylococcus pasteuri*. The isolates were observed to produce off-flavors, gas, and slime when growing on the sugar-rich media. Knowledge on the microorganisms capable of growing in the filling of chocolate pralines and a screening of their growth limits is the first step in control of spoilage of chocolate pralines without addition of preservatives.

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Effects of different st microbial flora and sa whey protein powder

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Whey protein concentrate(WPC) produced from cheese whe evaporation/condensation(WPC) the powdered product. These functional properties) the microf shelf-life and safety of WPC/WI separate effects of each ultrafiltration(retentate productic and spay-drying or freeze drying a large number of indust preheating,condensation and dr Results showed that preheating o ensuring microbial safety, while microorganisms(by up to 1 logc aerobic plate count(APC), entero affect the levels of *B.cereus* stage,spray-drying had a bacteric reduction of APC above 2 logc inoculated with bacterial pathog bacteriocidal effect on *L.mon E.coli*(4-7 log reduction compare resistant in this food matrix,if a only rapidly killed at 70°C.Thus, the preheating(in order to improv undermine safety.Furthermore,re and then freeze-dried or spray-c drying processes.Spray-drying pathogens,in fact freeze drying no effect upon *C.perfringens* an forming pathogens increased aft processing stage on the microb improving the production proces formulas,where strict microbial c